

**REMARKS**

At the outset, the Examiner is thanked for the thorough review and consideration of the pending application. The Office Action dated September 11, 2009 has been received and its contents carefully reviewed.

Claims 6, 8, and 16 are hereby amended. Claims 1-5, 7, and 9-10 are canceled without prejudice or disclaimer. Claim 18 is newly added. No new matter has been added. Accordingly, claims 6, 8, and 11-18 are currently pending. Reexamination and reconsideration of the pending claims are respectfully requested.

The Office Action rejects claims 3 and 8 under 35 U.S.C. §112, second paragraph, as being indefinite. Applicants have canceled claim 3, and amended claim 8 and added new claim 18 to more clearly define claimed subject matter. Applicants therefore respectfully request withdrawal of the rejection of claims 3 and 8.

The Office Action rejects claim 1-5 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0091610 to Hird et al. (*Hird*). Claims 1-5 are canceled, so the rejection is moot. Applicants respectfully request withdrawal of the rejection of claims 1-5.

The Office Action rejects claims 6-13 and 16-17 under 35 U.S.C. §103(a) as being unpatentable over *Hird* in view of U.S. Patent No. 6,369,121 to Catalfamo et al. (*Catalfamo*) and U.S. Patent Application Publication No. 2003/0134918 to Ko et al. (*Ko*), as evidence by U.S. Patent No. 5,633,220 to Cawiezel et al. (*Cawiezel*) and U.S. Patent No. 5,948,855 to Lin et al. (*Lin*). Claims 7 and 9-10 are canceled, so the rejection of these claims is moot. Applicants respectfully traverse the rejection of claims 6, 8, 11-13, and 16-17.

Claim 6 recites, “a solid polymer foam, which is formed of a crosslinked, exclusively hydrocarbon copolymer of styrene and divinylbenzene.” *Hird* fails to teach or suggest at least this element of claim 6. Instead, *Hird* discloses a list of monomers and simply mentions that these monomers could be used in combination. *Hird*, ¶0052. *Hird* does not disclose which specific monomers could be used in combination. The only place where *Hird* cites divinylbenzene is “a monomer combination comprising 2-ethyl-hexylacrylate (EHA) (5.50 g),

divinylbenzene (of 43% purity with balance being ethyl styrene) (DVB-42) (3.30 g), and 1,6-hexanediol diacrylate (HDDA) (1.20 g).” *Hird*, ¶0142. But this combination includes 3 different monomers. Therefore, *Hird* is silent with respect to “a crosslinked, exclusively hydrocarbon copolymer of styrene and divinylbenzene” as recited in claim 6.

*Ko*, *Catalfamo*, *Cawiezel*, and *Lin* do not cure the deficiency of *Hird*. The Office cites *Ko* for disclosing using supercritical carbon dioxide to produce a foam having improved fluid intake rate. *Office Action*, page 7. The Office cites *Catalfamo*, *Cawiezel*, and *Lin* for disclosing the use of ethylbenzene as an oily material. *Office Action*, page 7. *Ko*, *Catalfamo*, *Cawiezel*, and *Lin* are also silent with respect to the above-recited element of claim 6. Accordingly, claim 6 is allowable over the combined teaching of *Hird*, *Ko*, *Catalfamo*, *Cawiezel*, and *Lin*. Claims 8, 11-13, and 16-17 variously depend from claim 6, and are also allowable for at least the same reasons as claim 6.

Furthermore, the solid polymer foams prepared according to processes of claimed invention show unexpected results. Specifically, the inventors have set the goal of “providing ‘polyHIPE’ foams having the lowest possible density and, for this density, the lowest possible mean cell diameter, while exhibiting a satisfactory mechanical strength which allows them to be formed by mechanical machining (for example turning) or by laser.” *Specification*, page 2, line 29, to page 3, line 4. The inventors achieved these goals by providing “a ‘polyHIPE’ foam which is formed from a crosslinked, exclusively hydrocarbon, polymer based on styrenic monomers and which exhibits a density at least equal to 20 mg/cm<sup>3</sup> and cells with a mean diameter at most equal to 20 microns.” *Specification*, page 3, lines 13-18. Thus, it would not have been obvious to one of ordinary skill in the art to combine 5 references (*Hird*, *Ko*, *Catalfamo*, *Cawiezel*, and *Lin*) to arrive at the claimed invention.

Applicants therefore respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claims 6-13 and 16-17.

The Office Action rejects claims 14 and 15 under 35 U.S.C. §103(a) as being unpatentable over *Hird*, *Catalfamo*, *Ko*, *Cawiezel*, and *Lin*, and further in view of U.S. Patent Application Publication No. 2003/0036575 to Sasabe et al. (*Sasabe*), as evidence by Lenntech/Deionized water, Water Treatment Handbook, 6<sup>th</sup> Edition, 1991 (*Handbook*).

Claims 14 and 15 variously depend from claim 6, and incorporate all the elements of claim 6. As discussed, the combined teaching of *Hird*, *Catalfamo*, *Ko*, *Cawiezel*, and *Lin* fails to teach or suggest at least the above-recited element of claim 6, namely, “a solid polymer foam, which is formed of a crosslinked, exclusively\_hydrocarbon copolymer of styrene and divinylbenzene.” *Sasabe* and *Handbook* do not cure the deficiency of *Hird*, *Catalfamo*, *Ko*, *Cawiezel*, and *Lin*. The Office only cites *Sasabe* and *Handbook* for disclosing the use of deionized water and the resistivity of the deionized water. *Office Action*, page 9. *Sasabe* and *Handbook* are also silent with respect to the above-recited element of claim 6. Accordingly, claim 6 and its dependent claims 14 and 15 are allowable over *Hird*, *Catalfamo*, *Ko*, *Cawiezel*, *Lin*, *Sasabe*, and *Handbook*. Applicants therefore respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claims 14 and 15.

The Office Action rejects claim 11 under 35 U.S.C. §103(a) as being unpatentable over *Hird*, *Catalfamo*, *Ko*, *Cawiezel*, and *Lin*, and further in view of U.S. Patent No. 6,303,834 to Mork et al. (*Mork*). Applicants respectfully traverse the rejection.

Claim 11 depends from claim 6, and incorporate all the elements of claim 6. As discussed, the combined teaching of *Hird*, *Catalfamo*, *Ko*, *Cawiezel*, and *Lin* fails to teach or suggest at least the above-recited element of claim 6, namely, “a solid polymer foam, which is formed of a crosslinked, exclusively\_hydrocarbon copolymer of styrene and divinylbenzene.” *Mork* does not cure the deficiency of *Hird*, *Catalfamo*, *Ko*, *Cawiezel*, and *Lin*. The Office only cites *Mork* for disclosing the use of aluminum sulfate as an electrolyte. *Office Action*, page 11. *Mork* is also silent with respect to the above-recited element of claim 6. Accordingly, claim 6 and its dependent claim 11 are allowable over *Hird*, *Catalfamo*, *Ko*, *Cawiezel*, *Lin*, and *Mork*. Applicants therefore respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claims 14 and 15.

The Office Action rejects claims 1-13 and 16-17 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,331,015 to DesMarais et al. (*DesMarais*) in view of *Catalfamo*, *Ko*, *Cawiezel*, and *Lin*. Claims 1-5, 7, and 9-10 are canceled, so the rejection of these claims is moot. Applicants respectfully traverse the rejection of claims 6, 8, 12,13 and 16-17.

Claim 6 recites, “a solid polymer foam, which is formed of a crosslinked, exclusively hydrocarbon copolymer of styrene and divinylbenzene.” *DesMarais* fails to teach or suggest at least this element of claim 6. Instead, *DesMarais* discloses that “both the monofunctional glassy principal monomer(s) [preferably a styrene-based monomer] and the monofunctional rubbery comonomer(s) must be present in the oil phase” of the HIPE emulsions used to form absorbent foams. *DesMarais*, column 17, lines 39-42, emphasis added. *DesMarais* also discloses that a polyfunctional cross-linking agent component could be added to the monomer and comonomer. *DesMarais*, column 17, lines 60-64. And the polyfunctional cross-linking agent component “can be selected a wide variety of polyfunctional, preferably difunctional, monomers,” which include divinylbenzene. *DesMarais*, column 17, lines 64-66, emphasis added. Because the styrene-based monomer must be used together with a rubbery comonomer, *DesMarais* does not teach or suggest the above-recited element of claim 6 and in fact teaches away from the above-recited element of claim 6.

*Ko*, *Catalfamo*, *Cawiezel*, and *Lin* do not cure the deficiency of *Hird*. The Office cites *Ko* for disclosing using supercritical carbon dioxide to produce a foam having improved fluid intake rate. *Office Action*, page 15. The Office cites *Catalfamo*, *Cawiezel*, and *Lin* for disclosing the use of ethylbenzene as an oily material. *Office Action*, page 14-15. *Ko*, *Catalfamo*, *Cawiezel*, and *Lin* are also silent with respect to the above-recited element of claim 6. Accordingly, claim 6 is allowable over the combined teaching of *DesMarais*, *Ko*, *Catalfamo*, *Cawiezel*, and *Lin*. Claims 8, 11-13, and 16-17 variously depend from claim 6, and are also allowable for at least the same reasons as claim 6.

Applicants therefore respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claims 1-13 and 16-17.

The Office Action rejects claims 14 and 15 under 35 U.S.C. §103(a) as being unpatentable over *DesMarais*, *Catalfamo*, *Ko*, *Cawiezel*, and *Lin*, and further in view of *Sasabe* and *Handbook*.

Claims 14 and 15 variously depend from claim 6, and incorporate all the elements of claim 6. As discussed, the combined teaching of *DesMarais*, *Catalfamo*, *Ko*, *Cawiezel*, and *Lin* fails to teach or suggest at least the above-recited element of claim 6, namely, “a solid polymer

foam, which is formed of a crosslinked, exclusively\_hydrocarbon copolymer of styrene and divinylbenzene.” *Sasabe* and *Handbook* do not cure the deficiency of *DesMarais*, *Catalfamo*, *Ko*, *Cawiezel*, and *Lin*. The Office only cites *Sasabe* and *Handbook* for disclosing the use of deionized water and the resistivity of the deionized water. *Office Action*, page 17. *Sasabe* and *Handbook* are also silent with respect to the above-recited element of claim 6. Accordingly, claim 6 and its dependent claims 14 and 15 are allowable over *DesMarais*, *Catalfamo*, *Ko*, *Cawiezel*, *Lin*, *Sasabe*, and *Handbook*. Applicants therefore respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claims 14 and 15.

The Office Action rejects claim 11 under 35 U.S.C. §103(a) as being unpatentable over *DesMarais*, *Catalfamo*, *Ko*, *Cawiezel*, and *Lin*, and further in view of *Mork*.

Claim 11 depends from claim 6, and incorporate all the elements of claim 6. As discussed, the combined teaching of *DesMarais*, *Catalfamo*, *Ko*, *Cawiezel*, and *Lin* fails to teach or suggest at least the above-recited element of claim 6, namely, “a solid polymer foam, which is formed of a crosslinked, exclusively\_hydrocarbon copolymer of styrene and divinylbenzene.” *Mork* does not cure the deficiency of *DesMarais*, *Catalfamo*, *Ko*, *Cawiezel*, and *Lin*. The Office only cites *Mork* for disclosing the use of aluminum sulfate as an electrolyte. *Office Action*, page 19. *Mork* is also silent with respect to the above-recited element of claim 6. Accordingly, claim 6 and its dependent claim 11 are allowable over *DesMarais*, *Catalfamo*, *Ko*, *Cawiezel*, *Lin*, and *Mork*. Applicants therefore respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claims 14 and 15.

Applicants believe the application is in condition for allowance and early, favorable action is respectfully solicited. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 496-7500 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911.

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